Claims

We claim:

1. A valve plug comprising:
 (A) a valve plug head;
 (B) a valve plug stem;
 (C) a valve plug stem base for receiving said valve plug head, wherein said valve plug stem base is fixed to said valve plug stem and
 (D) a plug head band fitted to said valve plug head.
2. A valve plug, as recited in claims 1, further comprising a retaining ring fixed to said valve plug stem base and adapted to hold said plug head band in place.
3. A valve plug, as recited in claim 1, wherein said valve plug head is composed of a structural ceramic material.
4. A valve plug, as recited in claim 1, wherein said valve plug head is composed of a material selected from the group consisting of structural ceramics, cermets, cast irons, silicon irons, white irons, martensitic steels, CrCoFe alloys, and other metals that are not amenable to welding or brazing.
5. A valve plug, as recited in claim 1, wherein said plug valve stem is composed of a material selected from the group consisting of titanium and its alloys, zirconium and its alloys, niobium and its alloys, titanium-niobium allows, alloy steels, carbon steels, iron-base superalloys, stainless steels, nickel and its alloys, nickel-base superalloys, copper based alloys, cobalt alloys, cobalt-base superalloys, aluminum and its alloys, magnesium alloys, and tantalum.

6. A valve plug, as recited in claim 1, wherein said plug head band further comprises a first side and a second side, wherein said first side is larger than said second side.

7. A valve plug, as recited in claim 2, wherein said retaining ring is fixed to said valve plug stem base by one or more bolts held in place by one or more nut devices.

8. A valve assembly comprising:

(A) a first flow path;

(B) a second flow path;

(C) a valve chamber connecting said first flow path to said second flow path;

(D) a valve plug having a plug head, a plug stem and a plug shaft and wherein said plug head is held to said plug stem by a plug head band fit to said plug stem; and

(E) an actuator mechanically connected to said plug shaft to position said valve plug in said valve chamber.

9. A valve assembly, as recited in claim 8, wherein said plug stem further comprises a plug stem base that further comprises a cavity for receiving said plug head and a recess for holding said plug head band.

10. A valve assembly, as recited in claim 8, wherein said plug head is composed of a first material and said plug stem is composed of a second material and wherein said first material is different from said second material.

11. A valve assembly, as recited in claim 8, wherein said plug head is fixed to said plug stem by a fastening means, wherein said fastening means is unfastenable by removing one or more pins from said plug stem.

12. A valve assembly, as recited in claim 8, further comprising a means for sealing said actuator from said valve chamber.

13. A valve plug head retainer comprising:

(A) a means for holding a valve plug head to a valve plug stem; and

(B) a means for fastening said means for holding to said valve plug stem.

14. A valve plug head retainer, as recited in claim 13, wherein said means for holding further comprises a band in contact with said valve plug head and said valve plug stem.

15. A valve plug head retainer, as recited in claim 13, wherein said means for fastening further comprises a plurality of bolts, a plurality of nuts, and a plug head band.

16. A valve plug head retainer, as recited in claim 14, wherein said band further comprises a first side and a second side and wherein said first side is greater in height than said second side.

17. A valve plug head retainer, as recited in claim 13, wherein said means for fastening further comprises one or more pins.

18. A valve plug head retainer, as recited in claim 13, wherein said plug head is further comprised of a material selected from the group consisting of structural ceramics, cermets, cast irons, silicon irons, white irons, martensitic steels, and CrCoFe alloys.

19. A valve plug head retainer, as recited in claim 14, wherein said band further comprises a material selected from the group consisting of titanium and its alloys, zirconium and its alloys, niobium and its alloys, titanium-niobium alloys, alloy steels, carbon steels, iron-base superalloys, stainless steels, nickel and its alloys, nickel-base superalloys, copper based alloys, cobalt alloys, cobalt-base superalloys, aluminum and its alloys, magnesium alloys, and tantalum.

20. A valve plug head retainer, as recited in claim 13, wherein said band is composed of a first material and said plug head is composed of a second material and where said first material is different from said second material.